

## IMPROVED SIGNAL PROCESSING APPARATUS AND METHOD

### Abstract of the Invention

A method and an apparatus to analyze two measured signals that are modeled as containing desired and undesired portions such as noise, FM and AM modulation.

5 Coefficients relate the two signals according to a model defined in accordance with the present invention. In one embodiment, a transformation is used to evaluate a ratio of the two measured signals in order to find appropriate coefficients. The measured signals are then fed into a signal scrubber which uses the coefficients to remove the unwanted portions. The signal scrubbing is performed in either the time domain or

10 in the frequency domain. The method and apparatus are particularly advantageous to blood oximetry and pulserate measurements. In another embodiment, an estimate of the pulserate is obtained by applying a set of rules to a spectral transform of the scrubbed signal. In another embodiment, an estimate of the pulserate is obtained by transforming the scrubbed signal from a first spectral domain into a second spectral

15 domain. The pulserate is found by identifying the largest spectral peak in the second spectral domain.

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